Weyerhaeuser Project Memorandum

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Subject: Bathymetry and Visual Sediment Assessment Data Quality Objectives and Work Scope
Emergency Response Action, 12th Street Landfill (OU-4), Plainwell, Michigan

Background

In 2001, the United States Environmental Protection Agency (USEPA) issued a Record of Decision (ROD) for the 6.5-acre 12th Street Landfill located in Otsego Township within Allegan County. The 2001 ROD included eleven major components[1], including relocation of residuals present in the powerhouse channel to the landfill and construction of an erosion control system protective of a 500-year flood event. In February 2007, the USEPA authorized a Time-Critical Removal Action (TCRA) to remove PCB-contaminated sediment in the former Plainwell Impoundment (a section of Operable Unit #5 of the Allied Paper/Portage Creek/Kalamazoo River Superfund Site). As part of the TCRA, the earthen section of the Plainwell Dam will be removed and the Kalamazoo River will be rerouted through the former powerhouse channel. The 12th Street Landfill abuts the river and is located directly downstream of the earthen section of the Plainwell Dam.

Rerouting of the Kalamazoo River will impact paper residuals currently present in the channel and will create different erosion and flood conditions along the 12th Street Landfill river bank. Weyerhaeuser Company (Weyerhaeuser) is planning to address these issues under Section XVII (Emergency Response) paragraph 67 of Weyerhaeuser's January 2005 Consent Decree with the USEPA. The impact of the rerouted river on the residuals and erosion protection requirements will be evaluated during an expedited design process being conducted by Weyerhaeuser. The bathymetry of the channel and sediment characteristics are needed to evaluate water barrier systems and evaluate sediment removal options for the material contiguous to the 12th Street landfill.

The bathymetric survey information available is limited to areas upstream and downstream of the 12th Street landfill. Weyerhaeuser has developed Data Quality Objectives (DQOs) and a Scope of Work to collect bathymetric information and visual assessment of the sediments for the powerhouse channel adjacent to the landfill in order to support the Emergency Response Action at the 12th Street Landfill.

[1] USEPA Superfund Record of Decision, Allied Paper, Inc./Portage Creek/Kalamazoo River EPA ID: MID006007306 OU4 9/28/01 EPA/ROD/R05-01/521 2001.

Bathymetric Survey and Visual Sediment Assessment Data Quality Objectives

The purpose of the bathymetric and visual sediment assessment is to determine the water depth, sediment depth and cross section, visual paper residuals content so that the sediment removal design can be completed. Water depth and sediment characteristics are needed for the design of a water control system to isolate the sediments adjacent to the landfill. Visual observation of the sediment materials within the power channel will be used to identify any obvious paper residuals to allow estimate of removal quantities needed in the design. A detailed discussion of each of the seven steps to support these DQOs is presented in Table 1.

Bathymetric and Visual Sediment Assessment Work Scope

- Perform bathymetric assessment of the powerhouse channel adjacent to the 12th Street landfill by physically measuring water depth to top of sediment every 25 feet along eight transects evenly spaced from the south to north edges of the landfill. (see Figure 1)
- Prepare a figure and cross sections detailing the water depth throughout the channel adjacent tot the landfill.
- Obtain core samples at approximately 15 locations for visual assessment. Cores will be taken utilizing a lexan core sampler to a depth of 2 feet below sediment surface or refusal. Each core will be labeled to indicate the location, date, visual observation log and project identification number. Representative photographs will be taken of the cores.
- The cores will be disposed within a drum located on the 12th Street landfill and ultimately placed within the pad constructed on the landfill for disposal of the power channel sediments.
- Decontamination of all equipment will be performed at the landfill site. Decontamination water will be containerized in 55-gallon barrels that will be properly labeled and stored on site. The water will be managed appropriately with other decontamination water or wastes generated during upcoming site activities. A plan for ultimate disposal will be submitted as part of the landfill closure documentation.

Table 1
Geotechnical Investigation Data Quality Objectives
Question Summary

Major Steps	Questions to Consider	Site Information
Step 1: State the Problem	*Identify the members of the planning team and the primary decision-maker.*	The members of the planning team will include the Weyerhaeuser Project Manager, and RMT project team. The primary decision-maker is the Weyerhaeuser Project Manager. Decisions must be acceptable to the USEPA RPM.
	Develop a concise description of the problems.	No existing data is available regarding water depths within the powerhouse channel adjacent to the 12th Street landfill. Minimal visual assessment of the sediments within the channel in this area is available.
	Specify available resources and relevant deadlines for the study.	Information is needed as soon as possible to coordinate with the planned Time Critical Removal Action on the Former Plainwell Impoundment (TCRA).
Step 2: Identify the Decisions	*Identify the principal study questions.*	What is the depth of water to sediment and what are the visual characteristics of the sediments within the channel adjacent to the 12th Street Landfill?
	Define alternative actions.	If physically measurements are not possible electronic depth equipment may be utilized. If cores are not obtainable, bulk samples will be obtained.
	Develop decision statement.	Once measurements and cores are completed, Cross sectional details can be finalized.
Step 3: Identify Inputs to the Decision	*Identify the information that will be required to resolve the decision statement.*	Measurements to sediment surface and in-tact cores for visual observation.
	Determine the sources for each item of the information identified.	Upstream and downstream bathymetry from KRSG and US Geological Survey.
	Identify the information that is needed to establish the action level.	Physical measurement of water depth to top of sediment along with visual classification of soil types and homogeneity of sediments.
	Confirm that appropriate measurement methods exist to provide the necessary data.	Physical measurements with visual classification will be consistent with data needs.

Major Steps	Questions to Consider	Site Information
Step 4: Define the Boundaries of the Study	*Specify the characteristics that define the population of interest.*	Water depth, soil types, grain size, color, and characteristics.
	Define the spatial boundary of the decision statement.	Former Power House Channel East of the 12th Street landfill.
	Define the temporal boundary of the decision statement.	Design information needed immediately to support construction in 2007.
	Define the scale of decision-making.	Water depth and sediment characteristics provide information needed to allow design of water barriers and sediment removal process and estimated volumes.
	Identify practical constraints on data collection.	Practical constraints could be debris on riverbed, water current along north boundaries of area, other obstructions limiting coring ability, and adverse weather.
Step 6: Specify Tolerable Limits on Decision Errors	*Determine the possible range of the parameter of interest.*	Water levels and sediment characteristics similar to assumed information within the TCRA.
	Identify the decision errors, and choose the null hypothesis.	The baseline condition (null hypothesis) is water depths greater than 10 feet which will limit types of water barrier and sediment removal options.
	Specify the range of possible values of the parameters of interest where the consequences of decision errors are relatively minor.	Miscellaneous debris may be viewed as abnormal riverbed heights. Interpolation of adjacent transects is likely to identify more realistic bed plane, Non-consistency of soil sediments may be identified. Uncertainty could be addressed through physical testing of samples if visual assessment is highly variable.
	Assign probability values to points above and below the action level that reflect the tolerable probability for the occurrence of decision errors.	It is very unlikely that the number of points taken from the transects identified will result in misinformation of water levels. Similarly, the likelihood for error is low since there are quite a few cores and the data is to be used for design approaches and estimates so a small variance is acceptable.
Step 7: Optimize the Plan	*Review the DQO outputs and existing environmental data.*	Visual information from multiple soil samples will be combined with location information and water depth to assess the existing site conditions.
	Develop the general data collection design.	Data design is based upon multiple points along eight transects across the width of the channel.